United States Patent [19]

Sanders

[11] **3,778,995**

[45] **Dec. 18, 1973**

[54] **DRAFTING METHOD**

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[21] Appl. No.: **179,022**

[52] **U.S. Cl.** **57/156,** 57/36, 57/90, 19/258, 19/244

[51] **Int. Cl.** **D02g 3/00,** D01h 5/00

[58] **Field of Search** 19/236, 258, 244, 19/288, 257, 260, 248, 249, 252; 57/156, 36, 90

[56] **References Cited**

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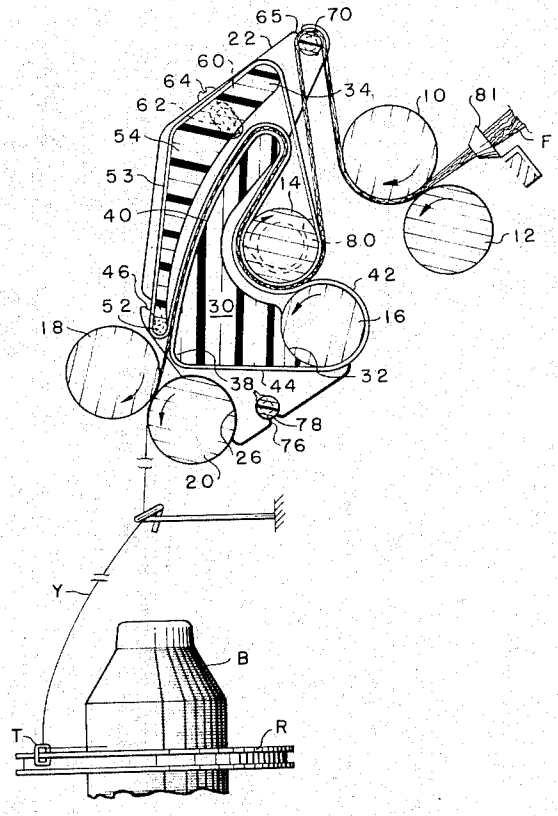
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Primary Examiner—Dorsey Newton
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[57] **ABSTRACT**

Method of drafting sliver which has at least some of the staple fibers therein longer than the distance between center lines of adjacent pairs of rolls in a drafting system.

1 Claim, 3 Drawing Figures

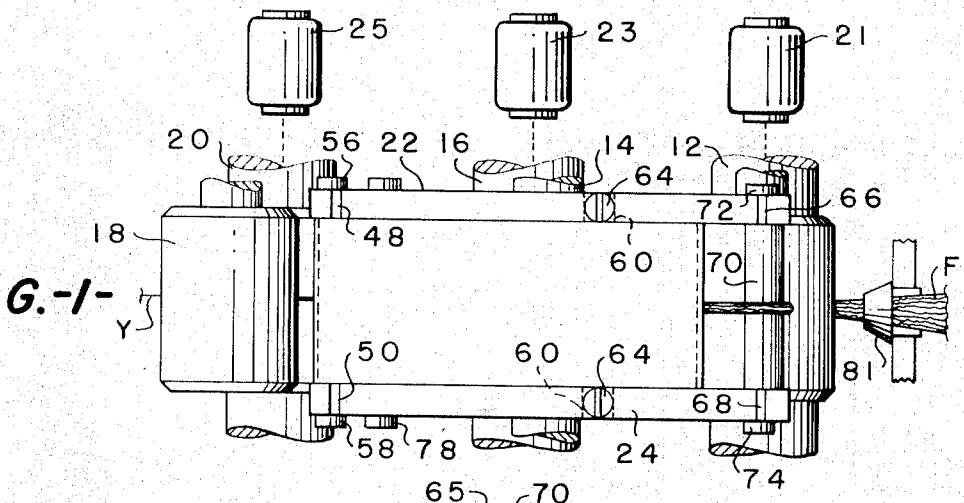


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SHEET 1 OF 2

FIG.-1-



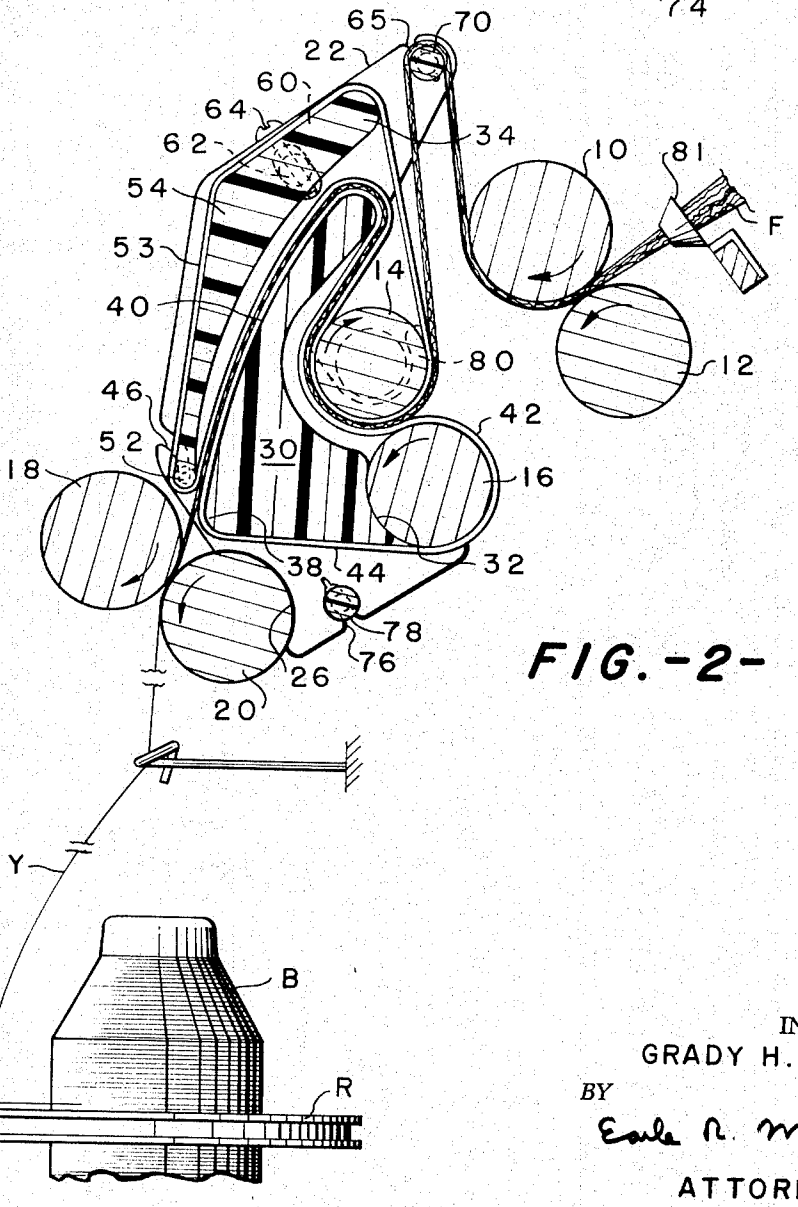


FIG.-2-

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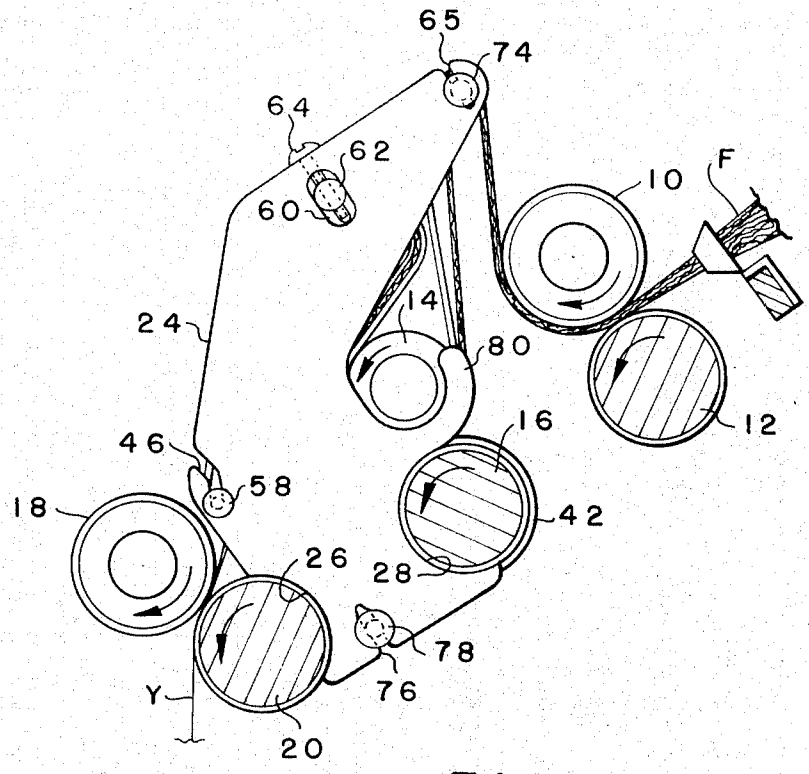


FIG. -3-

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DRAFTING METHOD

In recent years the textile industry has gone into production of yarn which contains longer and longer staple fibers. This yarn is either a blend of long and short staple fibers or composed of all long staple fibers. It is very difficult to draft long fibers on spinning frames on the cotton system since the ratch or distance between pairs of drafting rolls is too short to draft long staple fibers of 3'' or more length. Various techniques have been tried on these spinning frames but involved expensive modifications of the frame and resulted in poor quality yarn.

Therefore it is an object of the invention to provide a method and apparatus to draft long staple fibers which does not involve expensive modification to the spinning frame and provides a high quality yarn.

Other objects and advantages of the invention will become clearly apparent as the specification proceeds to describe the invention with reference to the accompanying drawings, in which:

FIG. 1 is a top view of the new and improved drafting arrangement;

FIG. 2 is a cross-sectional view of the drafting arrangement shown in FIG. 1; and

FIG. 3 is a view showing the cradle side plate mounting in relation to the front and middle drafting rolls.

Looking now to the drawings, the drafting arrangement comprises three sets of drafting rolls, namely, back rolls **10** and **12**, middle rolls **14** and **16** and front rolls **18** and **20**. Each set of rolls has the rolls in nip forming engagement with each set of rolls being driven by any suitable means, such as motors **21, 23,** and **25,** schematically presented in FIG. **1,** at a faster rate than the preceding set of rolls to provide the desired degree of drafting of the fibers in the zones between the respective pairs of rolls.

As pointed out previously, the purpose of this invention is to provide a method and apparatus to draft long staple fibers on a conventional cotton spinning frame on which the normal ratch is about 4 inches from the center line of the rear rolls to the center line of the front rolls. To accomplish this a new and novel drafting cradle is provided. The drafting cradle has a pair of side walls **22** and **24** each having a notch **26** to engage the lower front roll **20** and another surface **28** to engage the lower middle roll **16.** Interconnected between the side walls **22** and **24** is an apron guiding member **30** which has a concave surface **32** engaging the surface of the roll **16** and two apron reversing portions **34** and **38.** The apron reversing portions are connected by an apron guiding surface **40** to guide the apron **42** from apron reversing portion **34** to apron reversing portion **38.** Another apron guiding surface **44** extends between the apron reversing portion **38** and the concave surface **32.** Preferably the apron guiding member **30** will be made in two sections with one section molded to side **22** and the other section **24** so that they will mate together.

Side walls **22** and **24** have notches **46** therein to accommodate the stub shafts **48** and **50** connected to the apron reversing nose portion **52** of the elongated apron guide member **54** which extends across the width of apron **53.** Attached to the stub shafts **48** and **50** are tabs **56** and **58** to aid in maintaining the cradle walls **22** and **24** in a predetermined spaced relationship. Each of the side walls has an oval shaped notch **60** therein to accommodate a dowel **62** attached to the side of the

apron guide member **54.** A screw member **64** is screwed down through the top of each side wall **22** and **24** and through each dowel **62** to adjust the tension in the apron **53** and the tensor opening between the aprons **42** and **53** at the respective nose portions **38** and **52.** It can be seen that if the screw **64** is screwed in the downward direction the nose portion **52** will move upwardly in the notches **46** and vice versa, thereby providing ease of adjustment of the tensor opening without replacement of parts.

In the upper portion of the cradle walls **22** and **24** are further notches **65** to accommodate the stub shafts **66** and **68** attached to bar member **70.** Tabs **72** and **74,** like tabs **56** and **58,** also aid in maintaining the spaced relationship of the side walls **22** and **24.** Another notch **76** is located in each of the bottom portions of the cradle side walls **22** and **24** to accommodate the bar member **78** for further support of the spaced relationships of the cradle walls.

The cradle walls **22** and **24** are each molded with a hook portion **80** to define a cavity into which the upper roll is guided into nip forming relationship with roll **16** by the weight arm (not shown) of the drafting system.

In operation a sliver or roving of fibers F is supplied into the nip of rear rolls **10, 12** through a conventional condenser **81.** From the nip of rolls **10, 12** the fibers F wrap partially around roll **10** and are directed upwardly over bar **70.** From the bar **70** the fibers F pass downwardly into the nip of the middle rolls **14, 16.** At the nip of rolls **14, 16** the drafting aprons contact the fibers F and aid in guiding the fibers around the roll **14** backwardly to and around the reversing portion **34** of the apron guiding member **54** and down the apron guiding surface **40** into the nip of front rolls **18, 20.** From the nip of rolls **18, 20** the fibers are twisted into yarn Y by the conventional ring R and traveler T and taken up on bobbin B.

It should be noted that the fiber path between the nip of rolls **10, 12** and rolls **14, 16** as well as the fiber path between rolls **14, 16** and **18, 20** is considerably longer than the normal fiber path which normally would be directly from one nip to the next adjacent nip. Therefore, much longer fibers can be drafted without the individual fibers being caught between two adjacent nips and being broken due to the differential speed of the rolls.

Although I have described in detail the preferred embodiment of my invention I contemplate that many changes may be made without departing from the scope of spirit of my invention and I desire to be limited only by the claims.

That which is claimed is:

1. A method of drafting fibers in a drafting system having at least three sets of drafting rolls with each set of rolls having a top roll and bottom roll in nip forming relationship and with the first set of rolls being spaced from the second set of rolls and the second set of rolls being spaced from the third set of rolls with the top rolls of each set having a centerline which is in substantially a straight line relationship with centerlines of the other top rolls of each set comprising the steps of: supplying fiber to be drafted into the nip of the first set of drafting rolls, directing the fiber from the nip of the first set of drafting rolls around at least 90° of the periphery of said first top roll in an upward direction, then directing the fiber downward into the nip of the second set of rolls, directing the fiber from the nip of the second set of rolls around at least 180° of the periphery of the top roll of the second set of rolls and then in a direction toward the first set of rolls, reversing the flow of fibers at least 180° and directing the fiber into the nip of the third set of rolls, and twisting the fibers supplied from the nip of the third set of drafting rolls.

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